CLAIMS

1. A cellulose acylate film, which comprises a cellulose acylate having a glucose unit of cellulose, wherein a hydroxyl group of the glucose unit is substituted by an acyl group having 2 or more carbon atoms,

wherein

DS2, DS3 and DS6 respectively representing degrees of substitution of the hydroxyl groups at 2, 3 and 6 positions of the glucose unit by the acyl group satisfy formulae (I) and (II), and

Re(λ) and Rth(λ) defined by formulae (III) and (IV) satisfy formulae (V) and (VI):

(I) $2.00 \leq DS2 + DS3 + DS6 \leq 3.00$

(II) $DS6 / (DS2 + DS3 + DS6) \geq 0.315$

(III) $Re(\lambda) = (nx - ny) \times d$

(IV) $Rth(\lambda) = \{(nx + ny) / 2 - nz\} \times d$

(V) $46 \leq Re(630) \leq 200$

(VI) $70 \leq Rth(630) \leq 350$

wherein Re(λ) is a retardation value by nm in a film plane of the cellulose acylate film with respect to a light having a wavelength of λ nm;

Rth(λ) is a retardation value by nm in a direction perpendicular to the film plane of the cellulose acylate film with respect to the light having the wavelength of λ nm;

nx is a refractive index in a slow axis direction in the film plane;

ny is a refractive index in a fast axis direction in the film plane;

nz is a refractive index in the direction perpendicular the film plane; and

d is a thickness of the cellulose acylate film.

2. The cellulose acylate film according to claim 1, wherein Rth(λ) satisfies formula (VII):

(VII) $160 \leq Rth(630) \leq 350$

3. The cellulose acylate film according to claim 1 or 2, wherein the acyl group is an acetyl group.

4. The cellulose acylate film according to any one of claims 1 to 3, which comprises a retardation-producing agent comprising one of a rod-like compound and a discotic compound.

5. The cellulose acylate film according to any one of claims 1 to 4, which comprises at least one of a plasticizer, an ultraviolet absorber and a peeling accelerator.

6. The cellulose acylate film according to any one of claims 1 to 5, which has a thickness of from 40 to 110 μm.

7. The cellulose acylate film according to any one of claims 1 to 6, which has an additive amount of from 10 to 30% by weight , the additive amount being based on a weight of the cellulose acylate.

8. The cellulose acylate film according to any one of claims 1 to 7, which has ΔRe of 12 nm or less and ΔRth of 32 nm or less,

wherein ΔRe represents a difference between a Re value at 25 °C and 10% RH and another Re value at 25 °C and 80% RH, and

ΔRth represents a difference between a Rth value at 25 °C and 10% RH and another Rth value at 25 °C and 80% RH.

9. The cellulose acylate film according to any one of claims 1 to 8, which has an equilibrium moisture content at 25 °C and 80% RH of 3.4% or less.

10. The cellulose acylate film according to any one of claims 1 to 9, which has a water vapor permeability of from 400 g/m^2·24 hr to 2,300 g/m^2·24 hr in terms of a film thickness of 80 μm, the water vapor permeability being measured at 60 °C and 95% RH for 24 hours.

11. The cellulose acylate film according to any one of claims 1 to 10, which undergoes change in weight of from 0 to 5% when allowed to stand for 48 hours under a condition of 80 °C and 90% RH.

12. The cellulose acylate film according to any one of claims 1 to 11, which undergoes change in dimension of from -2 to +2% when allowed to stand for 24 hours under each of a condition of 60 °C and 90% RH and another condition of 90 °C and 3% RH.

13. The cellulose acylate film according to any one of claims 1 to 12, which has a glass transition temperature Tg of from 80 to 180 °C.

14. The cellulose acylate film according to any one of claims 1 to 13, which has an elastic modulus of from 1,500 to 5,000 MPa.

15. The cellulose acylate film according to any one of claims 1 to 14, which has a photoelastic coefficient of 50 x 10^{-13} cm^2/dyne or less.

16. The cellulose acylate film according to any one of claims 1 to 14, which has a haze of from 0.01 to 2%.

17. The cellulose acylate film according to any one of claims 1 to 14, which comprises a silicon dioxide particle having a secondary average particle size of from 0.2 to 1.5 μm.

18. The cellulose acylate film according to any one of claims 1 to 17, wherein $Re_{(630)}$ and $Rth_{(630)}$ at 25 °C and 60% RH satisfy formulae (A) to (C):

(A) $46 \leq Re_{(630)} \leq 100$

(B) $Rth_{(630)} = a - 5.9Re_{(630)}$

(C) $520 \leq a \leq 600$

19. The cellulose acylate film according to any one of claims 1 to 18, wherein when Re and Rth measured at 25 °C and 60% RH with respect to different wavelengths satisfy formulae (D) and (E):

(D) $0.90 \leq Rth_{(450)}/Rth_{(550)} \leq 1.10$ and $0.90 \leq Rth_{(650)}/Rth_{(550)} \leq 1.10$

(E) $0.90 \leq Rth_{(450)}/Rth_{(550)} \leq 1.25$ and $0.90 \leq Rth_{(650)}/Rth_{(550)} \leq 1.10$

20. A polarizing plate comprising:

a polarizer; and

a protective film comprising a cellulose acylate film according to any one of claims 1 to 19.

21. The polarizing plate according to claim 20, which satisfies at least one of formulae (a) to (d):

(a) $40.0 \leq TT \leq 45.0$

(b) $30.0 \leq PT \leq 40.0$

(c) $CT \leq 2.0$

(d) $95.0 \leq P$

wherein TT represents a single plate transmittance at 25°C and 60%RH;

PT represents a parallel transmittance at 25°C and 60%RH;

CT represents a cross transmittance at 25°C and 60%RH; and

P represents a polarization degree at 25°C and 60%RH.

22. The polarizing plate according to claim 20 or 21, which satisfies at least one of formulae (e) to (g):

(e) $CT_{(380)} \leq 2.0$

(f) $CT_{(410)} \leq 1.0$

(g) $CT_{(700)} \leq 0.5$

wherein $CT(\lambda)$ represents a cross transmittance at the wavelength of λ nm.

23. The polarizing plate according to any one of claims 20 to 22, which satisfies at least one of formulae (j) and (k):

(j) $-6.0 \leq \Delta CT \leq 6.0$

(k) $-10.0 \leq \Delta P \leq 0.0$

wherein ΔCT and ΔP represents a change in cross transmittance and polarization degree, respectively, in a test that the polarizing plate is allowed to stand at 60°C and 95%RH for 500 hours; and the change means a value calculated by subtracting a measurement value before the test from a measurement value after the test.

24. The polarizing plate according to any one of claims 20 to 23, which comprises at least one of a hard coat layer, an antiglare layer and anantireflective layer.

25. The polarizing plate according to any one of claims 20 to 24, which is packaged in a moisture-proofed bag, wherein the moisture-proofed bag has an internal humidity of from 43 to 70% RH at 25 °C.

26. The polarizing plate according to any one of claims 20 to 24, which is packaged in a

moisture-proofed bag, wherein the moisture-proofed bag has a first humidity within a range of ±15% RH with respect to a second humidity, when the polarizing plate is superposed on a liquid crystal cell at the second humidity.

27. A liquid crystal display comprising:

a liquid crystal cell of OCB-mode or VA-mode; and

at least one of a cellulose acylate film according to any one of claims 1 to 19 and a polarizing plate according to any one of claims 20 to 26.

28. The liquid crystal display according to claim 27, wherein the liquid crystal cell is a liquid crystal cell of VA-mode, and

the liquid crystal display contains only one cellulose acylate film according to any one of claims 1 to 19 or only one polarizing plate according to any one of claims 20 to 26.

29. The liquid crystal display according to claim 27, which comprises a backlight,

wherein the liquid crystal cell is a liquid crystal cell of VA-mode, and

the at least one of the cellulose acylate film and the polarizing plate is between the liquid crystal cell and the backlight.